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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention]by the way, the shape etc. which are required of a tire component become complicated with highly-efficient-izing of a tire in recent years — \*\*\*\*. When such a tire component is twisted on a molding drum according to conventional technology, In response to the big influences of the shape complexity, therefore an inside-and-outside peripheral length difference, etc., the fall of wrapping location accuracy, collapse of the shape of the joint part on a molding drum, etc. occurred, and there was a problem that the fall of the uniformity of a tire and aggravation of balance arose.

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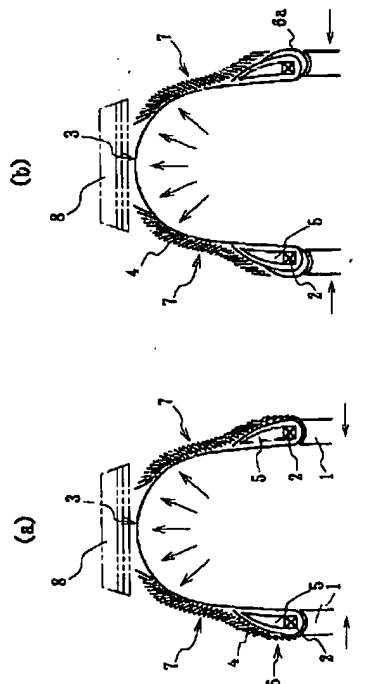
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(54) 【発明の名称】 空気入りタイヤの製造方法

(57) 【要約】

【課題】 部品点数の増加なしに、所期した通りの形状のタイヤ構成部材を確実に形成し、また、タイヤの成型作業能率に加え、製品タイヤのユニフォミティおよびバランスを大きく向上させ、しかも、タイヤ構成部材のジョイント部の存在に起因する性能低下を防止する。

【解決手段】 生タイヤの成型に当って、円筒状に形成したカーカスバンド3の、ビードコア2間に位置する中央部分を半径方向外方へ膨出変形させた状態で、その膨出カーカスバンドの外周側に、未加硫ゴムのストリップ4を巻回してサイドウォール7等を形成する。



## 【特許請求の範囲】

【請求項1】 生タイヤの成型に当って、

円筒状に形成したカーカスバンドの、ビード部に位置する中央部分を半径方向外方へ膨出変形させた状態で、その膨出カーカスバンドの外周側に、未加硫ゴムのストリップを巻回して、少なくとも一種類のタイヤ構成部材を形成する空気入りタイヤの製造方法。

【請求項2】 ストリップの横断面形状をタイヤ構成部材の形状に応じて特定し、そのストリップを、巻回毎に、少なくとも一部分でオーバーラップさせながら積層してタイヤ構成部材とする請求項1に記載の空気入りタイヤの製造方法。

【請求項3】 二種類以上の未加硫ゴムのストリップを逐次巻回してタイヤ構成部材とする請求項1もしくは2に記載の空気入りタイヤの製造方法。

【請求項4】 それぞれのタイヤ構成部材を、ビードフィラ、サイドウォール、ゴムチェファ、緩衝ゴムおよびベルトアンダクッションとしてなる請求項1～3のいずれかに記載の空気入りタイヤの製造方法。

【請求項5】 生タイヤの成型に当って、円筒状に形成したカーカスバンドの、ビード部に位置する中央部分を半径方向外方へ膨出変形させて、その膨出カーカスバンドの外周上にベルト層を配設し、このベルト層の外周側に、一種類以上の未加硫ゴムのストリップを巻回して、少なくとも一種類のタイヤ構成部材を形成する空気入りタイヤの製造方法。

【請求項6】 ストリップの横断面形状をタイヤ構成部材の形状に応じて特定し、そのストリップを、巻回毎に、少なくとも一部分でオーバーラップさせながら積層してタイヤ構成部材とする請求項5に記載の空気入りタイヤの製造方法。

【請求項7】 それぞれのタイヤの構成部材を、トレッド、ベルト層間クッションおよびトレッドアンダクッションとしてなる請求項5もしくは6に記載の空気入りタイヤの製造方法。

【請求項8】 請求項1～4のいずれかに記載の製造方法と、請求項5～7のいずれかに記載の製造方法とを所要の順序で組合わせてなる空気入りタイヤの製造方法。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、空気入りタイヤなかでもラジアルタイヤの製造方法に関し、各種のタイヤ構成部材に要求される、形状、材質等の条件を十分に満足させてなお、すぐれた成型精度を実現するものである。

【0002】

【従来の技術】空気入りタイヤの製造、なかでも生タイヤの成型に当っては、予め成形されて前工程から供給されるゴム材料製の各種のタイヤ構成部材を成型ドラム上に順次に巻付けて貼着させるとともに、それらのタイヤ

構成部材を種々に変形させることが従来から広く一般に行われている。

【0003】

【発明が解決しようとする課題】ところで、近年はタイヤの高性能化に伴って、タイヤ構成部材に要求される形状等が複雑になっているも、このようなタイヤ構成部材を従来技術に従って成型ドラム上に巻付けた場合には、その形状の複雑さの故に、内外周長差等の大きな影響を受けて、巻付け位置精度の低下、成型ドラム上でのジョイント部の形状の崩れ等が発生して、タイヤのユニフォミティの低下やバランスの悪化が生じるという問題があった。

【0004】この一方で、タイヤ構成部材の形状は、それを成形する前工程の装置による制約を受けるため、所期した通りのものを一体成形できない場合があり、それ故に、所期した通りの形状の実現のために複数部品に分割して成形したときには、部品点数が増加することになって、成型ドラム上への巻付け工程数が増えるとともに、成型ドラム上でのジョイント数もまた増加して、生タイヤの成型作業能率が低下する他、タイヤユニフォミティの低下、バランスの悪化等が生じるという問題もあった。そして、同一のタイヤ構成部材を複数種類のゴムの積層構造体等によって構成する場合には、ゴム種相互の物性の相違等により予め成形されたタイヤ構成部材の形状が安定しないおそれが高かった。

【0005】この発明は、従来技術が抱えるこのような問題点を解決することを課題とするものであり、その目的とするところは、部品点数の増加なしに、所期した通りの形状のタイヤ構成部材を、たとえそれが複数種類のゴム材料からなる場合にあっては常に確実に形成することができ、また、タイヤ構成部材それ自体の巻付けに起因する位置精度の低下のおそれがなく、タイヤの成型作業能率に加え、製品タイヤのユニフォミティおよびバランスを大きく向上させることができ、しかも、タイヤ構成部材のジョイント部の存在に起因する性能低下をもたらすおそれのない空気入りタイヤの製造方法を提供するにある。

【0006】

【課題を解決するための手段】この発明の、空気入りタイヤの製造方法は、生タイヤの成型に当って、円筒状に形成したカーカスバンドの、ビード部に位置する中央部分を、半径方向外方へトロイダルに膨出変形させた状態で、その膨出カーカスバンドの外周側に、未加硫ゴムのストリップを巻回して、少なくとも一種類のタイヤ構成部材、たとえば、ビードフィラ、サイドウォール、ゴムチェファ、緩衝ゴムおよびベルトアンダクッションの少なくとも一種類を形成するものである。なおこの場合、二種類以上の未加硫ゴムストリップを逐次巻回してタイヤ構成部材を形成することもできる。

【0007】この方法では、たとえば、幅が5～20m

m、厚さが0.2～3mm程度の未加硫ゴムストリップを、たとえば、押出機、射出押出機、定容積押出機等の作用下によって、予めグリーンタイヤ形状に近い形状に膨出変形させたカーカスバンドの外周側に巻回積層して所要のタイヤ構成部材を形成することで、そのタイヤ構成部材が複雑な形状を有するものであっても、成形装置等による制約を受けることなく簡単かつ容易に、しかも高精度に形成することができる。

【0008】またここでは、ストリップを直接的に巻回積層することで、予めの成形体を巻つけ貼着する場合に比して、はるかにすぐれた位置精度をもたらし得るとともに、ジョイント部の発生を有効に防止することができる。これらの結果として、タイヤの成型作業能率を大きく向上させるとともに、製品タイヤのユニフォミティおよびバランスをもまた大きく向上させることができる。

【0009】加えてここでは、ストリップの直接的な巻回積層によってタイヤ構成部材を形成するので、それが複数種類のゴム材料からなる場合にあっては、逐次巻回することで形状の不安定さを十分に排除することができる。

【0010】ここでより好ましくは、ストリップの横断面形状をタイヤ構成部材の形状に応じて特定し、そのストリップを、巻回毎に、少なくとも一部分でオーバーラップさせながら積層する。これによれば、タイヤ構成部材の形状精度を一層高めることができ、タイヤ構成部材の均質性等をより向上させることができる。

【0011】そしてこれらのことは、生タイヤの成型に当って、円筒状に形成したカーカスバンドの、ビード部に位置する中央部分を半径方向外方へ膨出変形させるとともに、その膨出カーカスバンドの外周上にベルト層を配設し、そしてこのベルト層の外周側に、一種類以上の未加硫ゴムのストリップを巻回し、少なくとも一種類のタイヤ構成部材、たとえば、トレッド、ベルト層間クッションおよびトレッドアンダクッションの少なくとも一種類を形成する場合にもまたほぼ同様である。

【0012】ところで、膨出カーカスバンドの外周側にストリップを巻回する前者の方法と、膨出カーカスバンド上に配設したベルトの外周側にストリップを巻回する後者の方法とを組合わせた場合には、タイヤのユニフォミティ、バランス等のより一層の向上を実現することができる。

【0013】

【発明の実施の形態】以下にこの発明の実施の形態を図面に示すところに基づいて説明する。ここでははじめに、カーカスバンドドラム上で、たとえばドラム軸線方向に延びるプライコードからなるカーカスプライを円筒状に形成してカーカスバンドとし、たとえば、このカーカスバンドの両端部分上にビードコアを配設するとともに、カーカスバンドの端部分を、ビードコアおよびビードフィラを巻き込んで折り返す。

【0014】そしてかかるカーカスバンドを、同一のカーカスバンドドラム上で、または、フォーミングその他の成型手段上で、たとえば図1に示すように、ビードロック1を拡張変位させてビードコア2を拘束した状態で、カーカスバンド3の内周側へ直接的に、またはブラダを介して間接的に加圧流体を供給して、そのカーカスバンド3の中央部分を、両ビードロック、ひいては、両ビードコア2の近接変位下で半径方向外方へ膨出させた状態で、カーカスバンドの外周側に、たとえば押出機口金の作用の下で、ゴム材質および各種寸法を適宜選択した未加硫ゴムストリップ4を巻回して、巻回毎に、ストリップ4を少なくとも一部分でオーバーラップさせながらその巻回位置をバンド軸線方向の所要の範囲で、一回もしくは複数回にわたって変移させることで、全体として所要の形状および寸法を有するタイヤ構成部材を形成する。

【0015】図1(a)はこのことにより、ビードコア2の外周側に隣接して位置するビードフィラ5は別として、タイヤ構成部材としてのゴムチェーフア6およびサイドウォール7のそれぞれを巻回積層形成する場合を示し、図1(b)は、ゴムチェーフア6aを従来技術に従って巻付けて貼着させることで、サイドウォール7だけを巻回積層形成する場合を示す。

【0016】そして所要のタイヤ構成部材をこのようにして形成した後は、たとえば、カーカスバンド3の膨出変形量を増加させて、そのクラウン部を、予め成型されて、内外径寸法とともに特定されるベルト・トレッドバンド(以下「BTバンド」という)8の内周面に密着させることで、生タイヤの成型を完了する。

【0017】なお図2は、ゴムチェーフア6およびサイドウォール7のそれぞれを、未加硫ゴムストリップ4の巻回積層によって形成するに先だて、カーカスバンド3の中央部分を、BTバンド8に密着するまで大きく膨出変形させるものであり、これによれば、形成されたゴムチェーフア6およびサイドウォール7の事後的な変形を回避して、それらの形状および位置精度をより高めることができる。

【0018】また、図3は、タイヤ構成部材としてのビードフィラを未加硫ゴムストリップの巻回積層によって形成する場合を例示する図であり、図3(a)は、カーカスバンド3の端部分3aの折り返し前に、ビードコア2の外周に未加硫ゴムストリップ4を巻回積層してビードフィラ9を形成したものである。なおこの場合、ビードフィラ9の全体を一種類のゴムにて形成する他、たとえば硬度その他の加硫後物性の異なる二種類以上のゴムにて形成することもできる。

【0019】また図3(b)、(c)に示すものはそれぞれ、ビードフィラ9のうち、半径方向外側に位置する部分9aおよび、内側に位置する部分9bのそれぞれを未加硫ゴムストリップ4の巻回積層により形成する一方

で、残部9c, 9dのそれぞれを、上記ゴムと同種もしくは異種のゴム材料にて所要の形状に予め成形した成形体をもって形成したものである。

【0020】これらのいずれにあっても、カーカスバンド3の端部分3aをその後に折り返すことで、ビードフィラ9は、図1, 2に示す場合と同様に、ビードコア2とともに、その端部分3aに巻き込まれる。そして、その後に続く成型作業は、図1もしくは図2に示すようにして、または、後述するいずれかに従って行うことができる。

【0021】図4は、予め成形されたビードフィラ5、ゴムチェーファ6aおよびサイドウォール10のそれぞれを、カーカスバンド3の周りに従来技術に従って巻付けるとともに貼付けた状態で、そのカーカスバンド3の中央部分を、予め構成されたベルト層リング11の内周面に密着するまで膨出変形させた後、そのベルト層リング11の外周側に、一種類もしくは二種類以上のゴム材料からなる未加硫ゴムストリップ4を巻回積層して、たとえば、キャップ、ベース構造になり、中央部分に、キャップおよびベースをラジアル方向に横切る導電層を有するトレッド12を形成するものである。

【0022】なおここでは、トレッド12と併せて、そのトレッド12からサイドウォール10に跨がるミニサイド13をもまた巻回積層することとしているも、トレッド12だけを巻回積層によって形成することもでき、この場合には、予め成形したミニサイドを、トレッド12の形成後に配設することができる。

【0023】図5は他の実施形態を示す図であり、これは、カーカスバンド3の折返し端部分3aに、ビードコア2およびビードフィラ5を巻き込んだ状態で、その中央部分を大きく膨出変形させてベルト層リング11に密着させ、次いで、図4に示す場合と同様にしてベルト12を形成し、その後、図1(a)に示すと同様にしてサイドウォール7およびゴムチェーファ6を形成するものである。なおここで、サイドウォール7およびゴムチェーファ6を、トレッド12に先んじて形成することもできる。

【0024】以上この発明の実施の形態を図面に示すところに基づいて説明したが、この発明は、ビードコアを有しない、いわゆるビードコアレスタイヤにも適用し得ることはもちろんである。また、カーカスプライ上に配設される緩衝ゴム、ベルト層とカーカスバンドとの間に配設されるベルトアングクッションをタイヤ構成部材と

することもでき、ベルト層間クッション、トレッドとベルト層間に配設されるトレッドアングクッションをタイヤ構成部材とすることもできる。

【0025】

【発明の効果】かくしてこの発明によれば、所要に応じた材質の未加硫ゴムからなる、所要の寸法のストリップを巻回積層してタイヤ構成部材とすることで、部品点数の増加なしに、所期した通りの形状のタイヤ構成部材を、それが複数種類のゴム材料からなる場合にあって、形状の不安定さ等なしに常に確実に形成することができ、また、タイヤ構成部材それ自体を巻付けることに起因する位置精度の低下を防止して、製品タイヤのユニフォミティおよびバランスを大きく向上させるとともに、成型作業能率をもまた高めることができ、さらに、タイヤ構成部材のジョイント部の存在に起因するユニフォミティ、バランスその他の性能の悪化を十分に防止することができる。

【図面の簡単な説明】

【図1】 この発明の実施の形態を半部について示す軸線方向断面図である。

【図2】 他の実施の形態を示す軸線方向断面図である。

【図3】 他の実施の形態を示す軸線方向断面図である。

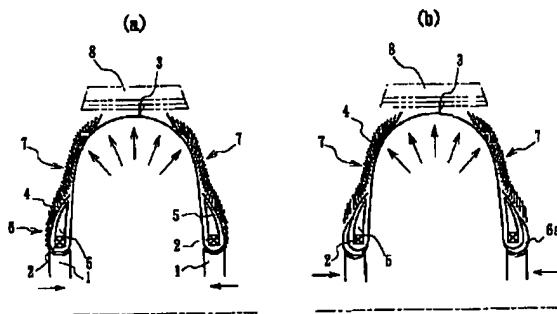
【図4】 他の実施の形態を示す軸線方向断面図である。

【図5】 さらに他の実施の形態を示す軸線方向断面図である。

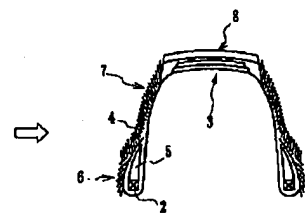
【符号の説明】

- 1 ビードロック
- 2 ビードコア
- 3 カーカスバンド
- 3a 端部分
- 4 未加硫ゴムストリップ
- 5, 9 ビードフィラ
- 6, 6a ゴムチェーファ
- 7, 10 サイドウォール
- 8 BTバンド
- 9a, 9b 部分
- 9c, 9d 残部
- 11 ベルト層
- 12 トレッド
- 13 ミニサイド

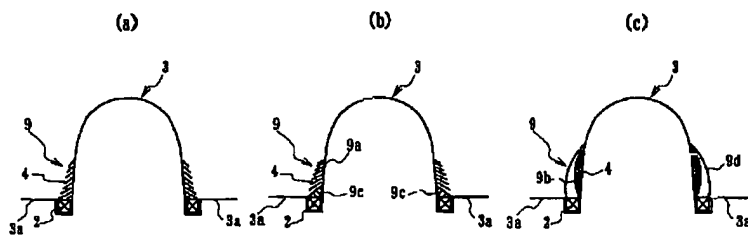
【図1】



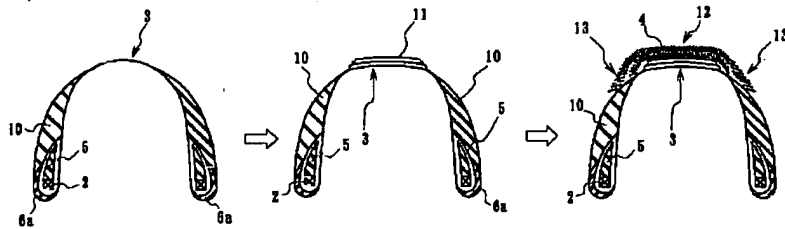
【図2】



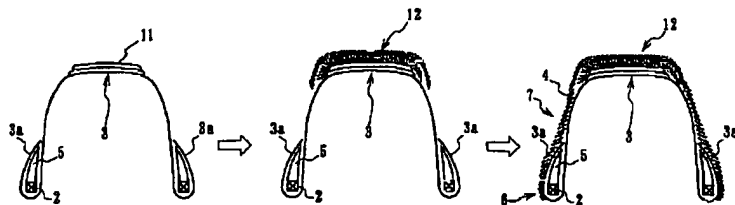
【図3】



【図4】



【図5】



# PATENT ABSTRACTS OF JAPAN

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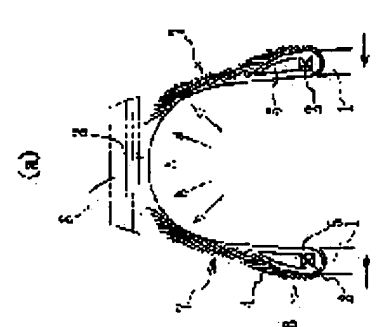
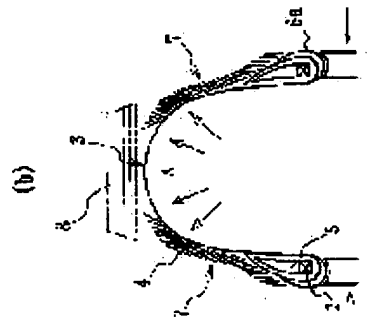
(72)Inventor : IIZUKA SHUHEI

## (54) MANUFACTURING METHOD FOR PNEUMATIC TIRE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To surely form a tire component member in an anticipated shape without increasing the number of components, to greatly improve the uniformity and balance of a product tire in addition to the efficiency of a molding operation of the tire and moreover to prevent deterioration of performance due to the presence of a joint part of the tire component member.

**SOLUTION:** In a state wherein the shape of the central portion of a cylindrically formed carcass band 3 positioned between bead cores 2 is changed to swell outward radially, on the occasion of molding a raw tire, a side wall 7 or the like is formed by winding a strip 4 of an unvulcanized rubber around on the outer peripheral side of the swelling carcass band.



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**CLAIMS**

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[Claim(s)]

[Claim 1]In molding of a green tire, where swell deformation is carried out to a method of the outside of a radial direction, a center portion located between [ of a carcass band formed cylindrical ] bead parts, A manufacturing method of a pneumatic tire which winds a strip of an unvulcanized rubber and forms at least one kind of tire component in the periphery side of the bulge carcass band.

[Claim 2]A manufacturing method of the pneumatic tire according to claim 1 which specifies lateral cross sectional shape of a strip according to shape of a tire component, is laminated, making the strip overlap at least by a part for every winding, and is used as a tire component.

[Claim 3]Claim 1 which winds a strip of two or more kinds of unvulcanized rubbers one by one, and is used as a tire component, or a manufacturing method of a pneumatic tire given in 2.

[Claim 4]A manufacturing method of the pneumatic tire according to any one of claims 1 to 3 which becomes considering each tire component as a bead filler, a sidewall, rubber chafer, shock absorbing rubber, and a belt under cushion.

[Claim 5]Swell deformation of the center portion located between [ of a carcass band formed cylindrical ] bead parts is carried out to a method of the outside of a radial direction in molding of a green tire, A manufacturing method of a pneumatic tire which allocates a belt layer on a periphery of that bulge carcass band, winds a strip of one or more kinds of unvulcanized rubbers around the periphery side of this belt layer, and forms at least one kind of tire component.

[Claim 6]A manufacturing method of the pneumatic tire according to claim 5 which specifies lateral cross sectional shape of a strip according to shape of a tire component, is laminated, making the strip overlap at least by a part for every winding, and is used as a tire component.

[Claim 7]Claim 5 which becomes considering members forming of each tire as a tread, a cushion between belt layers, and a tread under cushion, or a manufacturing method of a pneumatic tire given in 6.

[Claim 8]A manufacturing method of a pneumatic tire which combines the manufacturing method according to any one of claims 1 to 4 and the manufacturing method according to any one of claims 5 to 7 in necessary order.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention realizes molding accuracy which fully satisfied conditions required of various kinds of tire components, such as shape and construction material, about the manufacturing method of a radial-ply tire, and was excellent in addition also in the pneumatic tire.

[0002]

[Description of the Prior Art]In molding of a green tire, also in manufacture of a pneumatic tire, while twisting various kinds of tire components made from a rubber material which are fabricated beforehand and supplied from a previous process one by one on a molding drum and making them stick, generally boiling and changing various those tire components is widely performed from the former.

[0003]

[Problem(s) to be Solved by the Invention]by the way, the shape etc. which are required of a tire component become complicated with highly-efficient-izing of a tire in recent years — \*\*\*\*. When such a tire component is twisted on a molding drum according to conventional technology, In response to the big influences of the shape complexity, therefore an inside-and-outside peripheral length difference, etc., the fall of wrapping location accuracy, collapse of the shape of the joint part on a molding drum, etc. occurred, and there was a problem that the fall of the uniformity of a tire and aggravation of balance arose.

[0004]In order that the shape of a tire component may, on the other hand, receive the restrictions by the device of the previous process which fabricates it, When it divided and fabricates in two or more copy article for realization of shape as integral moulding of the thing as it carried out expected may not be able to be carried out and it so carried out expected, Part mark will increase and there was also a problem to a molding drum top that the number of joint on a molding drum also increases, the molding working capacity of a green tire falls while it twists and a routing counter increases, and also the fall of tire uniformity, aggravation of balance, etc. arose. And when the laminated structure body of two or more kinds of rubbers, etc. constituted the same tire component, a possibility that the shape of the tire component beforehand fabricated by the difference of the physical properties between rubber kinds etc. may not be stabilized was high.

[0005]The place which this invention makes it a technical problem to solve such a problem that conventional technology holds, and is made into the purpose of that, The tire component of shape as it carried out expected can always be certainly formed without the increase in part mark, even if it is, when it consists of two or more kinds of rubber materials even if, There is no fear of a fall of the accuracy of position resulting from tire component itself twisting, In addition to the molding working capacity of a tire, the uniformity and balance of a product tire can be raised greatly, and it is in providing the manufacturing method of a pneumatic tire without a possibility of moreover bringing about the degradation resulting from existence of the joint part of a tire component.

[0006]

[Means for Solving the Problem] A manufacturing method of a pneumatic tire of this invention is in a state to which it made toroidal one carry out swell deformation of the center portion located between [ of a carcass band formed cylindrical ] bead parts in molding of a green tire to a method of the outside of a radial direction, A strip of an unvulcanized rubber is wound and at least one kind of at least one kind of tire component, for example, a bead filler, a sidewall, rubber chafer, shock absorbing rubber, and a belt under cushion is formed in the periphery side of the bulge carcass band. Two or more kinds of unvulcanized rubber strips can be wound one by one in this case, and a tire component can also be formed.

[0007] In this method, an unvulcanized rubber strip with a width of 5-20 mm and a thickness of about 0.2-3 mm, for example by the bottom of an operation of an extrusion machine, an ejection extrusion machine, a constant-volume product extrusion machine, etc. By carrying out winding lamination and forming a necessary tire component in the periphery side of a carcass band which carried out swell deformation to shape near green tire shape beforehand. easy [ without receiving restrictions by molding equipment etc. ], even if it has shape with the complicated tire component — and it can form easily and with high precision.

[0008] what is directly done for the winding lamination of the strip here — a Plastic solid of eye \*\* — a volume — the price, while bringing about far outstanding accuracy of position as compared with a case where it sticks, Generating of a joint part can be prevented effectively, and as these results, while raising molding working capacity of a tire greatly, uniformity and balance of a product tire can also be raised greatly.

[0009] In addition, even if it is when it consists of two or more kinds of rubber materials since a tire component is formed by direct winding lamination of a strip, instability of shape can fully be removed by winding one by one here.

[0010] More preferably, lateral cross sectional shape of a strip is specified according to shape of a tire component, and it laminates here, making the strip overlap at least by a part for every winding. According to this, accuracy of form of a tire component can be raised further, and the homogeneity of a tire component, etc. can be raised more.

[0011] And while these things carry out swell deformation of the center portion located between [ of a carcass band formed cylindrical ] bead parts to a method of the outside of a radial direction in molding of a green tire, Allocate a belt layer on a periphery of that bulge carcass band, and to and the periphery side of this belt layer. It is also almost the same as when forming at least one kind of winding, at least one kind of tire component, for example, a tread, a cushion between belt layers, and a tread under cushion for a strip of one or more kinds of unvulcanized rubbers.

[0012] By the way, when a method of the latter which winds a strip around the method [ of the former which winds a strip around the periphery side of a bulge carcass band ], and periphery side of a belt allocated on a bulge carcass band is combined, much more improvement in uniformity of a tire, balance, etc. can be realized.

[0013]

[Embodiment of the Invention] This embodiment of the invention is described based on the place shown in a drawing below. Form the carcass ply which consists of a ply cord which is carcass band drum lifting and is first prolonged, for example in a drum shaft line direction here cylindrical, and it is considered as a carcass band, For example, while allocating a bead core on the both-ends portion of this carcass band, a bead core and a bead filler are involved in and the end part of a carcass band is turned up.

[0014] And this carcass band by the same carcass band drum lifting. Or as shown, for example in drawing 1 on another homering and molding means, where it carried out diameter expansion displacement of the bead lock 1 and the bead core 2 is restrained, If pressurized fluid is directly supplied to the inner circumference side of the carcass band 3 indirectly via a bladder, and the center portion of the carcass band 3 is beads [ both ]-locked and is pulled, In the state where it was made to bulge to the method of the outside of a radial direction under contiguity displacement of both the bead cores 2, to the periphery side of a carcass band, for example under an operation of an extrusion machine cap, The winding position, winding the unvulcanized rubber strip 4 which chose suitably the quality of a rubber material, and various sizes, and

making the strip 4 overlap at least by a part for every winding in the necessary range of a band axial direction. The tire component which has necessary shape and size as a whole by making it change over 1 time or multiple times is formed.

[0015]Drawing 1 (a) as the bead filler 5 adjoined and located in the periphery side of the bead core 2 by this being another, The case where winding laminating formation of the rubber chafer 6 as a tire component and each of the sidewall 7 is carried out is shown, and drawing 1 (b) is twisting and making the rubber chafer 6a stick, even if it follows conventional technology, and shows the case where winding laminating formation only of the sidewall 7 is carried out.

[0016]And after carrying out a necessary tire component in this way and forming it, For example, molding of a green tire is completed by making the amount of swell deformation of the carcass band 3 increase, being molded beforehand and sticking the crown part of that to the inner skin of the belt tread bands (henceforth "BT band") 8 where both inside-and-outside diameter dimensions are specified.

[0017]Drawing 2 each of the rubber chafer 6 and the sidewall 7, Precede forming by winding lamination of the unvulcanized rubber strip 4, carry out swell deformation greatly until it sticks the center portion of the carcass band 3 to the BT band 8, and according to this. Ex post modification of the rubber chafer 6 and the sidewall 7 which were formed can be avoided, and those shape and accuracy of position can be raised more.

[0018]Drawing 3 is a figure to illustrate the case where the bead filler as a tire component is formed by winding lamination of an unvulcanized rubber strip, and drawing 3 (a), Before the clinch of the end part 3a of the carcass band 3, winding lamination of the unvulcanized rubber strip 4 is carried out, and the bead filler 9 is formed at the periphery of the bead core 2. The whole bead filler 9 is formed with one kind of rubber in this case, and also it can also form with two or more kinds of rubbers from which the physical properties after hardness and other vulcanization differ, for example.

[0019]While what is shown in drawing 3 (b) and (c) forms each of the portion 9a located in radial outside among the bead fillers 9, and the portion 9b located inside by winding lamination of the unvulcanized rubber strip 4, respectively, Remainders [ 9c and 9d ] each is formed in necessary shape with the Plastic solid fabricated beforehand with the above-mentioned rubber, congener, or a rubber material of a different kind.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1]It is an axial direction sectional view showing this embodiment of the invention about a half part.

[Drawing 2]It is an axial direction sectional view showing other embodiments.

[Drawing 3]It is an axial direction sectional view showing other embodiments.

[Drawing 4]It is an axial direction sectional view showing other embodiments.

[Drawing 5]It is an axial direction sectional view showing the embodiment of further others.

[Description of Notations]

1 Bead lock

2 Bead core

3 Carcass band

3a End part

4 Unvulcanized rubber strip

5 and 9 Bead filler

6 6a Rubber chafer

7 and 10 Sidewall

8 BT band

9a and 9b Portion

9c and 9d Remainder

11 Belt layer

12 Tread

13 Mini side

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[Translation done.]

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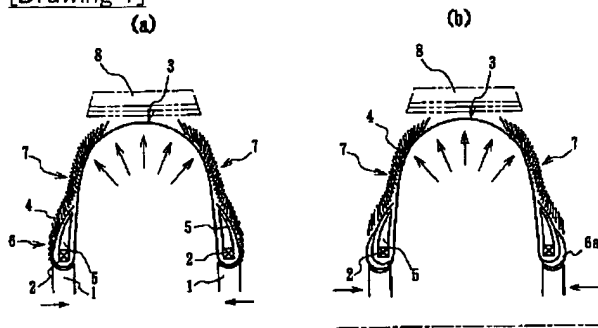
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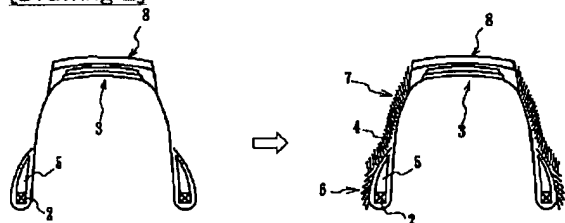
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## DRAWINGS

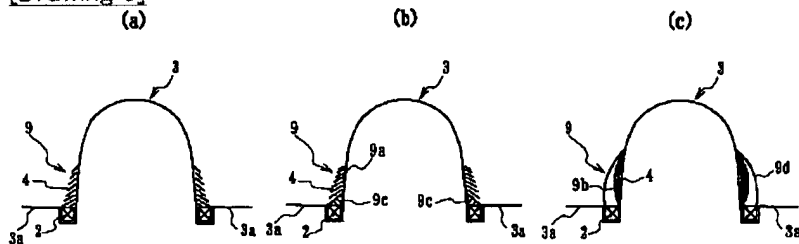
[Drawing 1]



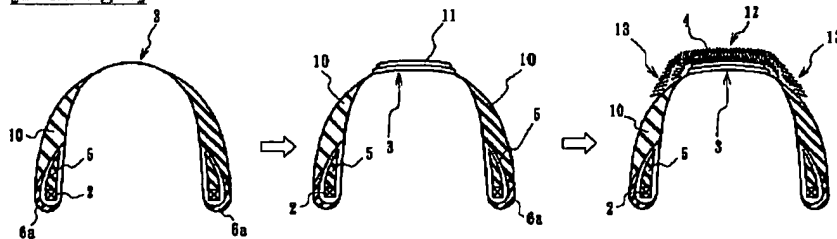
[Drawing 2]



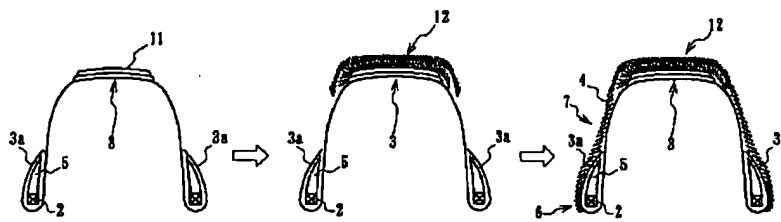
[Drawing 3]



[Drawing 4]



[Drawing 5]



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**EFFECT OF THE INVENTION**

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[Effect of the Invention]By carrying out winding lamination of the strip of the necessary size which consists of an unvulcanized rubber of the construction material according to necessary, and considering it as a tire component according to this invention, in this way. When it consists of two or more kinds of rubber materials, even if it is, the tire component of shape as it carried out expected without the increase in part mark, While preventing the fall of the accuracy of position resulting from have [ no instability of shape ] always being able to form certainly, and twisting tire component itself and raising the uniformity and balance of a product tire greatly, Molding working capacity can also be raised and aggravation of the uniformity resulting from existence of the joint part of a tire component, and balance and other performances can fully be prevented further.

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**MEANS**

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**PRIOR ART**

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**TECHNICAL FIELD**

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